Five-Year Review Report

Second Five-Year Review Report
for
The Town Garage/Radio Beacon Superfund Site
Town of Londonderry
Rockingham County, New Hampshire

March 2004

Prepared by:
The United States Environmental Protection Agency
Region 1, New England
Boston, Massachusetts

EPA New England

Approved by:

Susan Studlien

Susan Studlien, Director
Office of Site Remediation and Restoration
U.S. EPA, New England

Date:

03/30/04

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Five-Year Review Summary Form

SITE IDENTIFICATION

Site name: Town Garage/Radio Beacon

EPA ID: NHD981063860

Region: 1	**State:** New Hampshire	**City/County:** Londonderry/Rockingham

SITE STATUS

NPL status: ✓ Final G Deleted G Other (specify)_____

Remediation status (choose all that apply): G Under Construction G Operating ✓ Complete

Multiple OUs?* G YES ✓ NO	**Construction completion date:** September 30, 1992

Has site been put into reuse? ✓ YES G NO

REVIEW STATUS

Lead agency: ✓ EPA G State G Tribe G Other Federal Agency _____

Author name: James DiLorenzo

Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 1

Review period: February 6, 2004, through March, 2004

Date(s) of site inspection: February 27, 2004

Type of review:

✓ Post-SARA G Pre-SARA G NPL-Removal only
G Non-NPL Remedial Action Site G NPL State/Tribe-lead
G Regional Discretion

Review number: G 1 (first) ✓ 2 (second) G 3 (third) G Other (specify) _____

Triggering action:

G Actual RA Onsite Construction at OU #____ G Actual RA Start at OU#____
G Construction Completion ✓ Previous Five-Year Review Report
G Other (specify) _____

Triggering action date): March 31, 1999

Due date: March 31, 2004

Five-Year Review Summary Form, cont'd.

Issues:

No issues were identified during this review.

Recommendations and Follow-up Actions:

Londonderry's consultant will continue to sample residential and monitoring wells. If the results of sampling indicate that additional remedial actions are needed, options will be evaluated and implemented which would protect the public health.

Londonderry's consultant will sample surface waters after all monitoring wells have achieved cleanup levels.

The Groundwater Management Permit will remain in-place until all monitoring wells have achieved cleanup levels.

Protectiveness Statement:

Because the remedial actions being implemented throughout the Town Garage/Radio Beacon Superfund Site are protective, the site is protective of human health and the environment.

Town Garage/Radio Beacon Superfund Site
Second Five-Year Review Report

I. Introduction

The purpose of a five-year review is to determine whether a remedy at a Superfund site is protective of human health and the environment. The methods, findings and conclusions of reviews is documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them.

The U.S. Environmental Protection Agency (EPA) New England must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121(c) states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.*

EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*

EPA conducted this second five-year review of the remedial actions implemented at the Town Garage/Radio Beacon Superfund Site, in Londonderry, New Hampshire. This is a policy review since upon completion of the remedial action no hazardous substances will remain above levels that allow for unlimited use and unrestricted exposure, but five or more years are required to reach that point. The review was conducted from February through March, 2004. This report documents the results of the review. The trigger for this review is the signature date of the initial five-year review, March 31, 1999.

II. Site Chronology

Table 1 lists the chronology of events for the Town Garage/Radio Beacon Superfund Site.

Table 1: Chronology of Site Events

Date	Event
1984	Discovery of the problem
1988 - 1989	Provision of public water
March 31, 1989	Final listing on NPL
September 30, 1992	RI/FS completed
September 30, 1992	ROD signature
September 30, 1996	Unilateral Order issued to town of Londonderry to perform ground water monitoring
August 1997	Issuance of Groundwater Management Permit to town of Londonderry
March 31, 1999	First five-year review report

III. Background

A. Physical Characteristics

The Town Garage/Radio Beacon Superfund Site is located north of Pillsbury Road near the intersection of Pillsbury and High Range Roads in Londonderry, New Hampshire. Much of the area is wooded with a wetland located between residential developments. See Figure 1.

B. Land and Resource Use

The site encompasses two residential developments: twenty-three homes on Holton Circle and thirteen homes on Saddleback Road; a wetland area; and the Londonderry town garage area located on High Range Road.

All homes in the Saddleback Road subdivision are attached to a public water supply. Several homes in the Holton Circle subdivision remain on private wells since they have a long history of remaining unaffected by the groundwater contamination.

C. History of Contamination

The site was discovered in 1984 following a request to the State by residents of the Holton Circle subdivision to sample their bedrock wells. Sampling results from the New Hampshire Department of Environmental Services (NHDES) revealed the presence of volatile organic compounds (VOCs) in several of the residential drinking water wells and the nearby town garage well. The Site was added to the National Priorities List (NPL) on March 31,1989.

D. Basis for Taking Action

The major contaminants detected in ground water included 1,1 dichloroethene (1,1-DCE); 1,1 dichloroethane (1,1-DCA); and 1,1,1 trichloroethane (1,1,1-TCA) at levels above federal and state primary drinking water standards. Four non-site related metals: barium, beryllium, chromium and antimony were also discovered at concentrations in excess of drinking water standards.

IV. Remedial Actions

A. Remedy Selection

The remedial action objectives identified in the Record of Decision (ROD) issued September 30, 1992, are:

- ☞ Prevent ingestion of water which contains compounds in concentrations that exceed federal and state enforceable drinking water standards; and

- ☞ Prevent ingestion of water containing compounds which have no enforceable federal or state drinking water standards but which pose an unacceptable health risk.

The ROD identified natural attenuation with monitoring for remediation of site ground water and institutional controls to prevent consumption of contaminated ground water until ground water cleanup levels were attained. With regard to metals, the ROD concluded that elevated concentrations were probably due to sampling artifacts and not representative of actual conditions. Re-sampling of groundwater by an improved method (low-flow) was required to verify actual conditions.

B. Remedy Implementation

Groundwater monitoring was performed by the New Hampshire Department of Environmental Services (NH DES) until a Unilateral Administrative Order was issued to the Town of Londonderry on September 30, 1996. The Town was the only potentially-responsible party identified for the Site. The Town implemented required institutional controls and hired a consultant to perform continued groundwater monitoring.

C. System Operations/Operation and Maintenance (O&M)

Currently, the remedy remains monitored natural attenuation and the ground water is sampled once a year in the late fall. Ground water monitoring data indicates that the cleanup of the ground water is progressing as anticipated. The ROD cleanup goals for ground water, developed in response to the remedial action objectives, along with the maximum levels of contaminants found in monitoring wells since the last five-year review are presented in Table 2, below. See Figure 1 for the location of the monitoring wells.

Barium, beryllium, chromium and antimony were re-sampled using the low-flow sampling method. Results confirmed that actual concentrations did not exceed drinking water standards. Three rounds of subsequent monitoring were performed which verified this result. Metals were removed from the monitoring program.

Table 2: ROD Ground Water Cleanup Goals and Results

Contaminant	Target Level (µg/l)	1999-2002 Maximum/ Well No.	2003 Maximum/ Well No.
1,1,1-Trichloroethane	200	85 µg/l/MW-2D-6	19 µg/l/MW-2D-6
1,1-Dichloroethene	7	48 µg/l/MW-2D-6	28 µg/l/MW-2D-6
1,1-Dichloroethane	81	120 µg/l/MW-2D-6	57 µg/l/MW-2D-6

Maintenance primarily involves ensuring the integrity of the monitoring network so that representative samples can be obtained. A written agreement between Stonemark Investments, Inc., the developer of Saddleback Road and the Town of Londonderry, dated December 11, 1996, includes provisions for long-term access to, and maintenance of, monitoring wells. Durong the constructionof the Saddleback Road subdivision, MW-2S was destroyed and MW-2D damaged, but Stonemark Investments, Inc. implemented the necessary repairs consistent with the above agreement.

V. Progress Since the Last Five-Year Review

The last five-year review contained four recommendations for ensuring the protectiveness of the remedy. The status of their implementation is presented below:

(1) *The current annual groundwater monitoring program should continue*

The annual ground water program has continued and is documented in annual reports provided to EPA and NHDES.

(2) *Monitoring wells MW-2S and MW-2D are critical monitoring locations and should be replaced and/or repaired, as necessary, to effectively monitor continued progress towards achievement of remedial objectives*

Both wells were addressed so that no data was missed. Repairs were made to MW-2D and MW-2S was replaced on November 18, 1999, prior to the annual sampling event.

(3) *The Groundwater Management Permit should be maintained to ensure that potable wells are not installed within the plume area*

The permit duration is five years and was renewed in August 2002. No evidence was found of any new drinking water wells having been installed.

(4) *Surface water in the wetland area directly downgradient of the plume should be sampled once drinking water standards are achieved to ensure compliance with CWA ∮304(a)*

This recommendation is still valid, since drinking water standards have not been met in all wells.

VI. Five-Year Review Process

A. Administrative Components

The Town Garage/Radio Beacon Superfund Site five-year review was conducted by Roger Duwart, with assistance from James DiLorenzo, the EPA Remedial Project Manager, and Andrew Hoffman, the NHDES Remedial Project Manager.

B. Community Involvement

Copies of the review are being placed in the information repositories, including the Leach Public Library in Londonderry, New Hampshire. A copy is being provided to the Town Manager.

C. Document Review

This five-year review consisted of a review of relevant documents including Applicable and Relevant or Appropriate Requirements (ARARs), the Groundwater Management Permit, and monitoring data provided by the town of Londonderry's consultant. The sampling documents reviewed are presented in Attachment A.

D. Data Review

Review of records and monitoring reports through November of 2003, indicates that the remedy is performing as expected.

For the site, six ground water Chemicals of Concern were identified and had cleanup levels set. In the latest ground water sampling round (November, 2003), ten compliance wells and three residential wells were sampled. Only one Chemical of Concern, 1,1-dichloroethene, was found in only one well, MW-2D[1], above its cleanup level. Historical trends for several monitoring wells are presented in Attachment B.

E. Site Inspection

Representatives of EPA and NHDES, participated in the site inspection held on February 27, 2004. During the inspection, the residential development, town garage area and the ground water monitoring wells were observed. No potable wells were observed.

F. Interviews

The attorney representing the Town was contacted for an interview. No concerns were raised.

VII. Technical Assessment

A. Is the remedy functioning as intended by the decision documents?

The ROD estimated that the ground water would achieve cleanup levels through natural attenuation within seven to twenty-five years. Eleven years have passed and all but one Chemical of Concern in all but one fracture zone from one bedrock well has achieved cleanup levels. Moreover, a downward trend is evident in that fracture zone (see Figure 4). Therefore, it would appear that the remedy is functioning as intended.

B. Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?

There have been significant changes in land use on the site. However, the residential development which has occurred on the site is served by public water and no additional drinking water wells have been installed.

Under the 1986 cancer guidelines (U.S. EPA, 1986), 1,1-DCE (a Chemical of Concern for the site) was assigned to Group C, a possible human carcinogen. However, under the draft revised guidelines for carcinogenic risk assessment (U.S. EPA, 1999), EPA has concluded that the data for 1,1-DCE are *inadequate* for an assessment of human

[1]This is a bedrock well with permanently installed packer devices which extract samples from discrete fracture zones. Six such zones exist in this well. Only the deepest fracture zone, MW-2D-6 has 1,1-dichloroethene present above its cleanup level.

carcinogenic potential by the oral route. Therefore, a quantitative estimate of carcinogenic risk from oral exposure cannot be calculated. The federal and state drinking water standards remain at 7 µg/l, however.

No other changes have occurred in toxicity assumptions for site-related Chemicals of Concern.

The following applicable or relevant and appropriate requirements (ARARs) were reviewed for changes that could affect protectiveness:

Safe Drinking Water Act (40 CFR Part 141)
Resource Conservation and Recovery Act (40 CFR 264)
Clean Water Act (40 CFR 122)
New Hampshire Code of Administrative Rules Env-Wm 1403 (formerly Env-Ws 410)

No ARARs or "To Be Considered" criteria were changed which would affect the protectiveness of the remedy. Thus, the remedy is protective and in compliance with these ARARs.

C. Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light which would call into question the protectiveness of the remedy.

Technical Assessment Summary

The following conclusions support the determination that the remedy for the Town Garage/Radio Beacon Superfund Site remains protective of human health and the environment.

☛ Residential development has occurred on the site. However, public water is provided and therefore the remedy remains protective.

☛ A Groundwater Management Permit remains in effect to ensure that no new drinking water wells are installed within the site boundaries.

☛ No new contaminants, sources or exposure pathways were identified during this five-year review.

☛ The ground water flow patterns are consistent with the expectations at the time of the decision documents.

☛ A ground water monitoring plan is in place, sufficient to identify potential future problems and to provide information to address them, if necessary.

☛ The remedy is performing as expected and there are no indications of a potential failure.

VIII. Issues

No issues were identified during this review.

IX. Recommendations and Follow-up Actions

The consultant for the town of Londonderry will continue to sample residential and monitoring wells. If the results of sampling indicate that additional remedial actions are needed, options will be evaluated and implemented which would protect the public health.

The consultant for the town of Londonderry will sample surface waters after all monitoring wells have achieved cleanup levels.

The Groundwater Management Permit will remain in-place until all monitoring wells have achieved cleanup levels.

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
				Current	Future
Monitor ground water annually	Londonderry	EPA/NHDES	Late fall each year	N	N
Monitor surface water	Londonderry	EPA/NHDES	When all ground water cleanup levels have been achieved	N	N
Maintain institutional controls through Groundwater Management Permit	Londonderry	EPA/NHDES	Until all ground water cleanup levels have been achieved	N	N

X. Protectiveness Statement

Because the remedial actions being implemented throughout the Town Garage/Radio Beacon Superfund Site are protective, the site is protective of human health and the environment.

XI. Next Review

This site requires policy reviews every five years since upon completion of the remedial action no hazardous substances will remain above levels that allow for unlimited use and unrestricted exposure, but five or more years are required to reach that point. The next review will be issued either on or prior to five years from the date of signature of this report.

ATTACHMENT A

DOCUMENTS REVIEWED

"Groundwater Management Permit," New Hampshire Department of Environmental Services, August, 1997.

"Annual Report, 1999 Groundwater Monitoring Program, Town Garage/Radio Beacon Site, Londonderry, New Hampshire," Sanborn, Head & Associates, Inc., January 2000.

"Annual Report, 2000 Groundwater Monitoring Program, Town Garage/Radio Beacon Site, Londonderry, New Hampshire," Sanborn, Head & Associates, Inc., January 2001.

"Annual Report, 2001 Groundwater Monitoring Program, Town Garage/Radio Beacon Site, Londonderry, New Hampshire," Sanborn, Head & Associates, Inc., January 2002.

"Annual Report, 2002 Groundwater Monitoring Program, Town Garage/Radio Beacon Site, Londonderry, New Hampshire," Sanborn, Head & Associates, Inc., January 2003.

"Annual Report, 2003 Groundwater Monitoring Program, Town Garage/Radio Beacon Site, Londonderry, New Hampshire," Sanborn, Head & Associates, Inc., January 2004.

ATTACHMENT B

FIGURES

NOTES:

1) THE BASE MAP WAS REPRODUCED FROM A PLAN ENTITLED, "PLATE 3, LOCATION OF MONITORING WELLS, RESIDENTIAL WELLS, GEOPHYSICAL SURVEY LINES AND CROSS-SECTIONS"; FROM THE FINAL TECHNICAL REPORT OF FIELD INVESTIGATION, HOLTON CIRCLE REMEDIAL INVESTIGATION, LONDONDERRY, NEW HAMPSHIRE; PREPARED BY METCALF & EDDY, INC., DATED MARCH 1992.

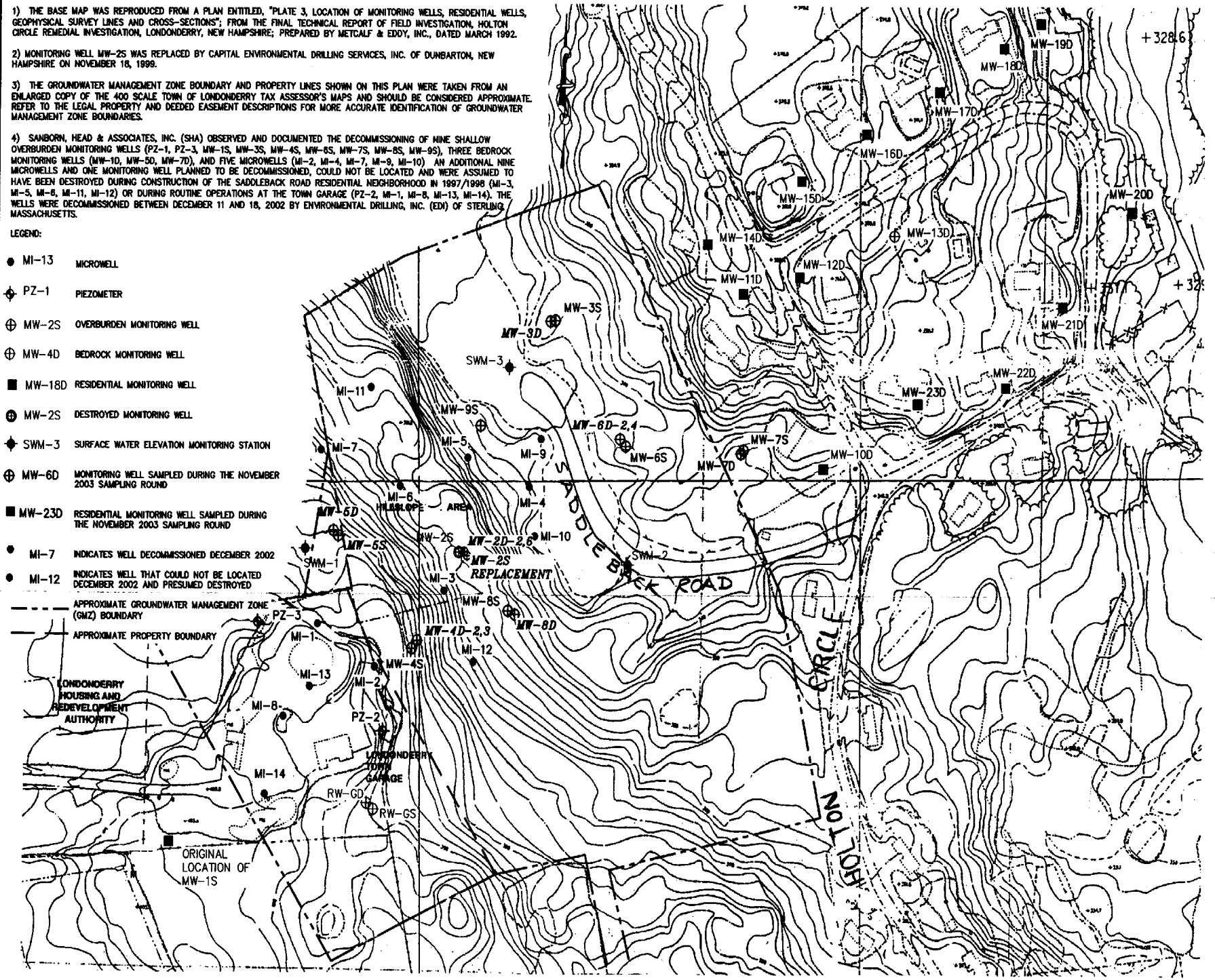
2) MONITORING WELL MW-2S WAS REPLACED BY CAPITAL ENVIRONMENTAL DRILLING SERVICES, INC. OF DUNBARTON, NEW HAMPSHIRE ON NOVEMBER 18, 1999.

3) THE GROUNDWATER MANAGEMENT ZONE BOUNDARY AND PROPERTY LINES SHOWN ON THIS PLAN WERE TAKEN FROM AN ENLARGED COPY OF THE 400 SCALE TOWN OF LONDONDERRY TAX ASSESSOR'S MAPS AND SHOULD BE CONSIDERED APPROXIMATE. REFER TO THE LEGAL PROPERTY AND DEEDED EASEMENT DESCRIPTIONS FOR MORE ACCURATE IDENTIFICATION OF GROUNDWATER MANAGEMENT ZONE BOUNDARIES.

4) SANBORN, HEAD & ASSOCIATES, INC. (SHA) OBSERVED AND DOCUMENTED THE DECOMMISSIONING OF NINE SHALLOW OVERBURDEN MONITORING WELLS (PZ-1, PZ-3, MW-1S, MW-3S, MW-4S, MW-6S, MW-7S, MW-8S, MW-9S), THREE BEDROCK MONITORING WELLS (MW-1D, MW-5D, MW-7D), AND FIVE MICROWELLS (MI-2, MI-4, MI-7, MI-9, MI-10) AN ADDITIONAL NINE MICROWELLS AND ONE MONITORING WELL PLANNED TO BE DECOMMISSIONED, COULD NOT BE LOCATED AND WERE ASSUMED TO HAVE BEEN DESTROYED DURING CONSTRUCTION OF THE SADDLEBACK ROAD RESIDENTIAL NEIGHBORHOOD IN 1997/1998 (MI-3, MI-5, MI-6, MI-11, MI-12) OR DURING ROUTINE OPERATIONS AT THE TOWN GARAGE (PZ-2, MI-1, MI-8, MI-13, MI-14). THE WELLS WERE DECOMMISSIONED BETWEEN DECEMBER 11 AND 18, 2002 BY ENVIRONMENTAL DRILLING, INC. (EDI) OF STERLING, MASSACHUSETTS.

LEGEND:

- MI-13 — MICROWELL
- PZ-1 — PIEZOMETER
- MW-2S — OVERBURDEN MONITORING WELL
- MW-4D — BEDROCK MONITORING WELL
- MW-18D — RESIDENTIAL MONITORING WELL
- MW-2S — DESTROYED MONITORING WELL
- SWM-3 — SURFACE WATER ELEVATION MONITORING STATION
- MW-6D — MONITORING WELL SAMPLED DURING THE NOVEMBER 2003 SAMPLING ROUND
- MW-23D — RESIDENTIAL MONITORING WELL SAMPLED DURING THE NOVEMBER 2003 SAMPLING ROUND
- MI-7 — INDICATES WELL DECOMMISSIONED DECEMBER 2002
- MI-12 — INDICATES WELL THAT COULD NOT BE LOCATED DECEMBER 2002 AND PRESUMED DESTROYED
- APPROXIMATE GROUNDWATER MANAGEMENT ZONE (GMZ) BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY



GRAPHICAL SCALE
0' 100' 200' 400'

Sanborn, Head & Associates
Consulting Engineers & Scientists

DRAWN BY: PGP
DESIGNED BY: PMS
CHECKED BY: SRN
REVIEWED BY: PMS
PROJECT MGR: SRN
PIC: PMS
DATE: JAN 04

TOWN GARAGE/RADIO BEACON SITE
LONDONDERRY, NEW HAMPSHIRE

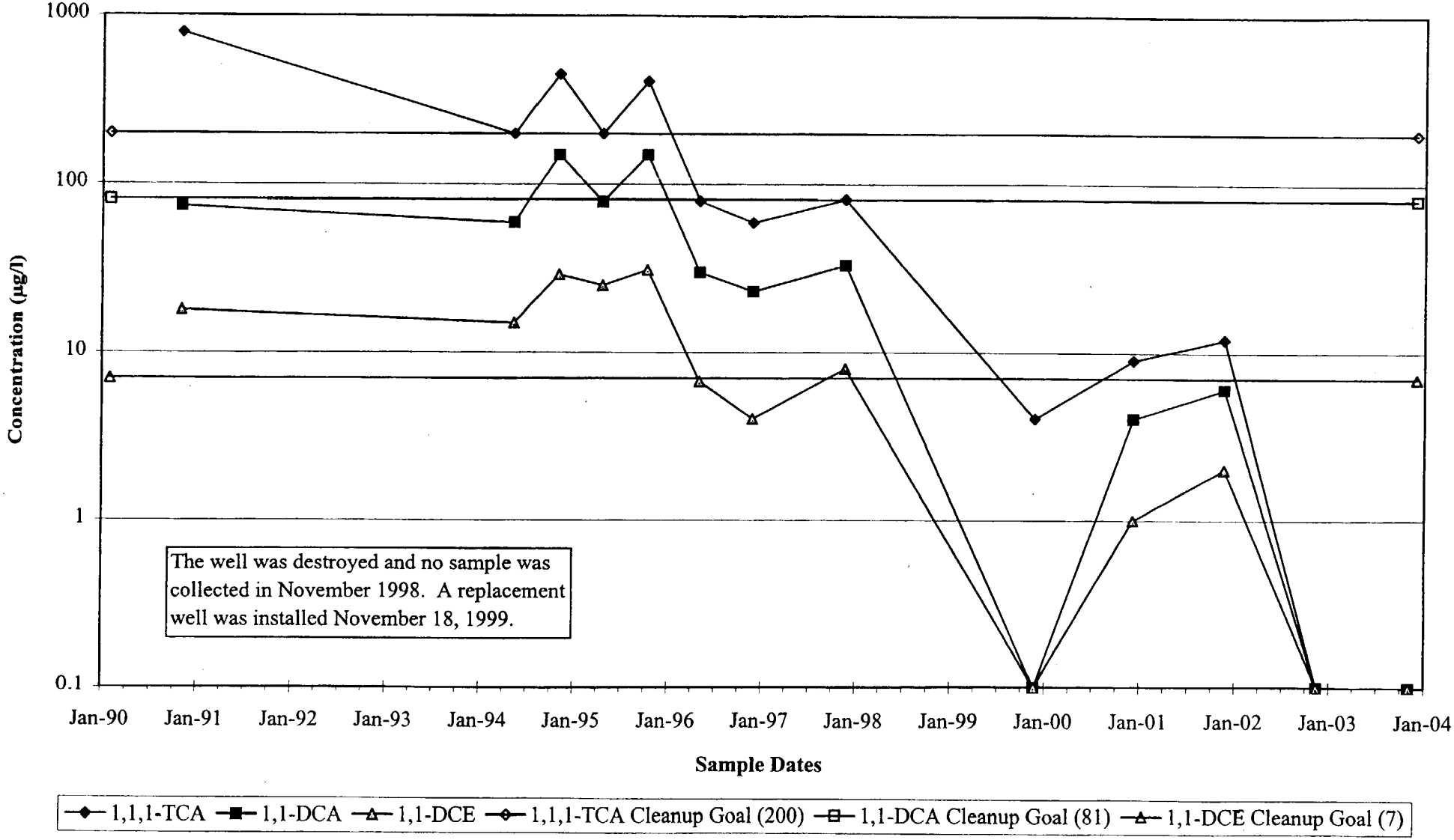
WELL LOCATION PLAN

PROJECT NUMBER: 2049

FIGURE NUMBER: 1

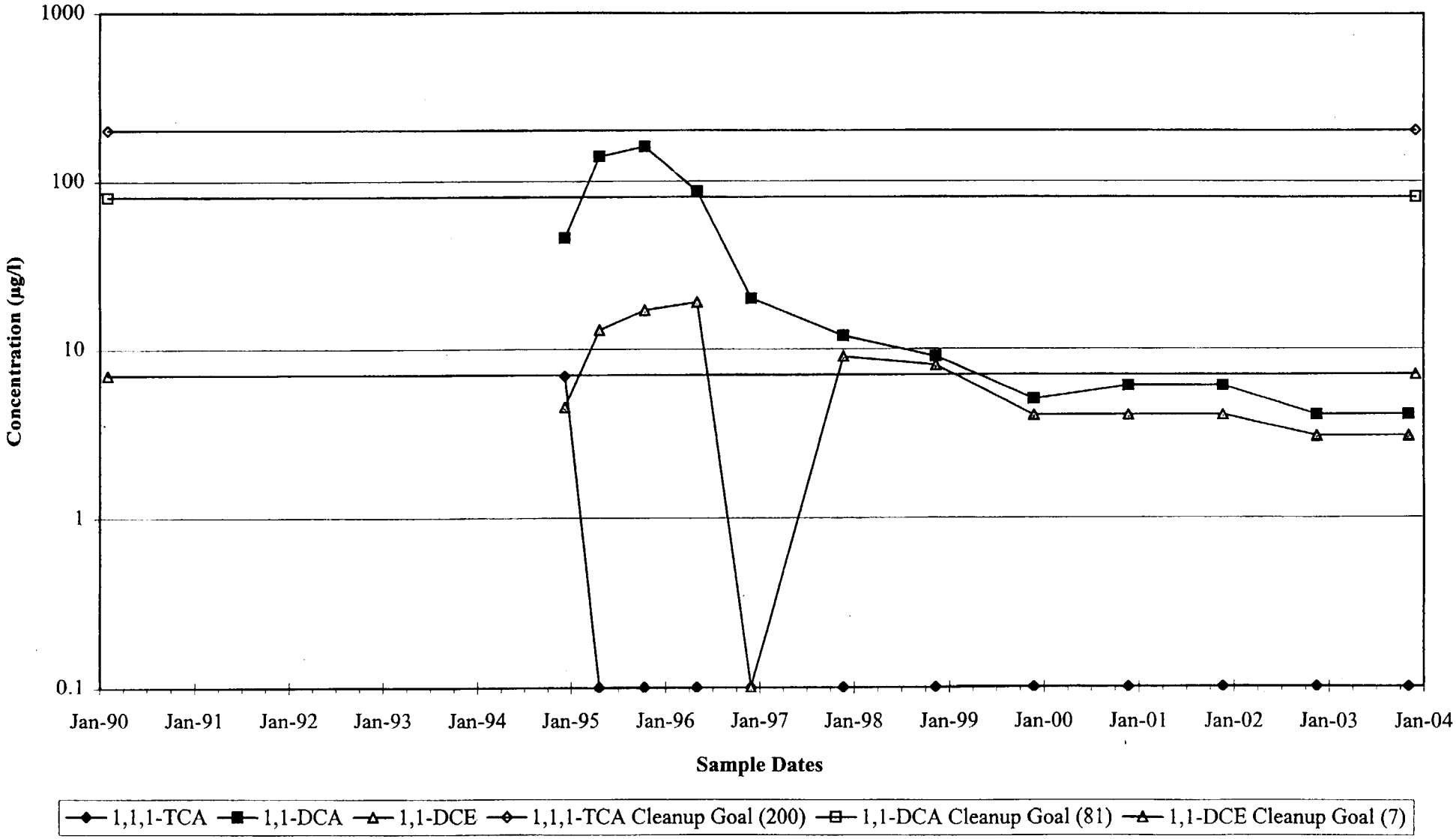
LAYOUT: FIGURE
CTB FILE: SHA STANDARD.CTB
PLOT DATE: 1-27-04

Figure 2
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-2S



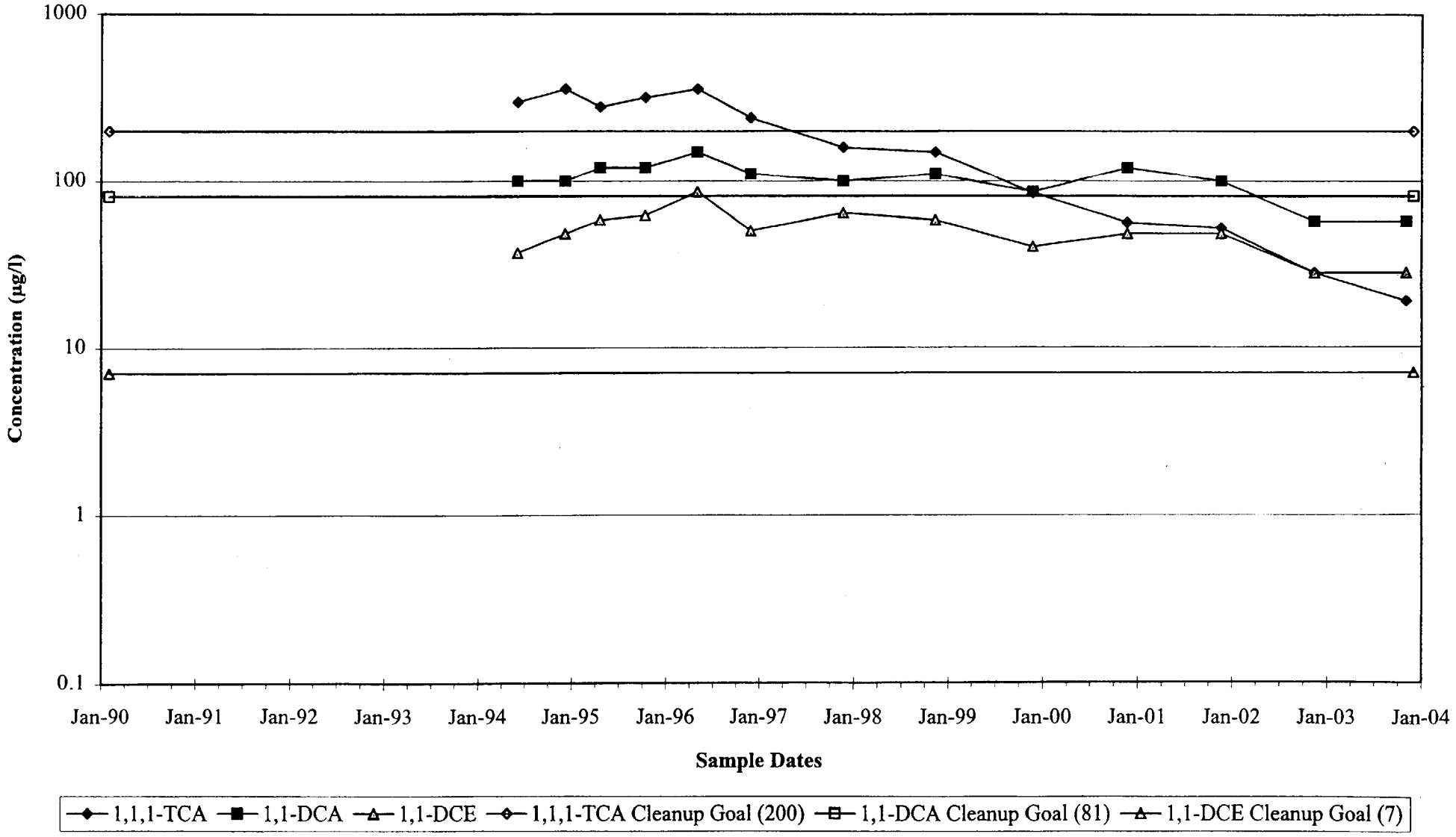
Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Figure 3
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-2D-2



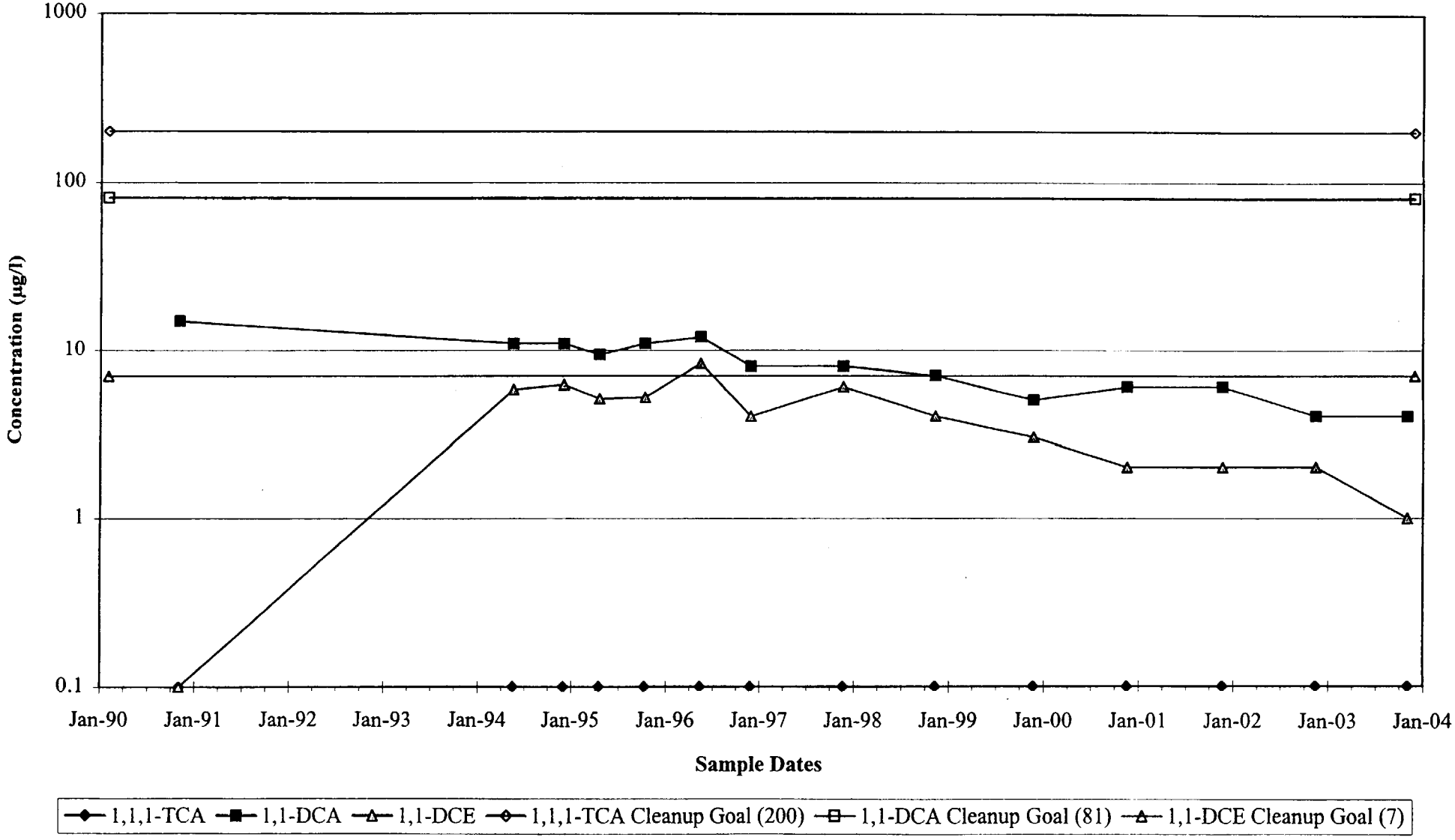
Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Figure 4
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-2D-6



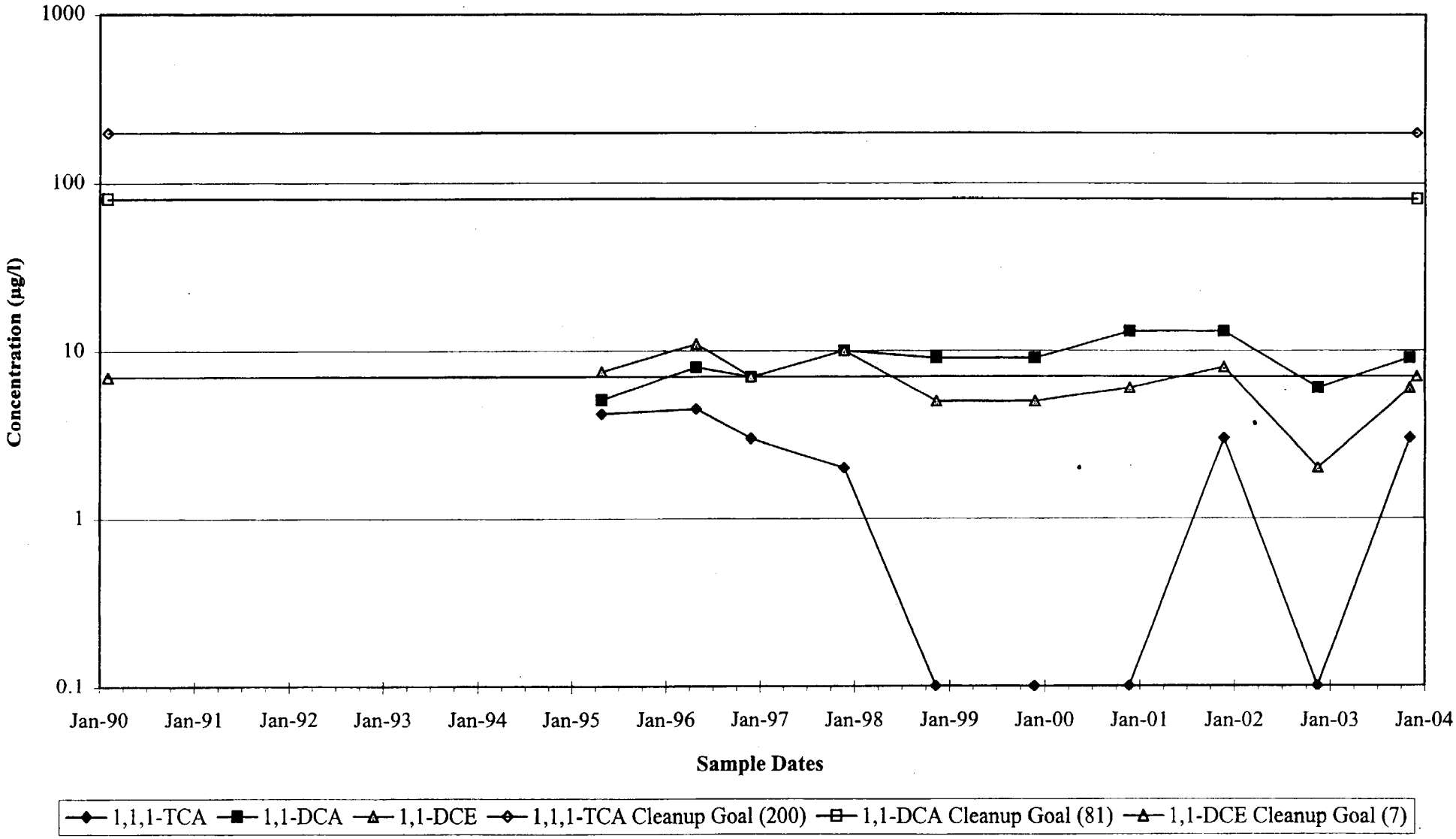
Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Figure 5
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-3D



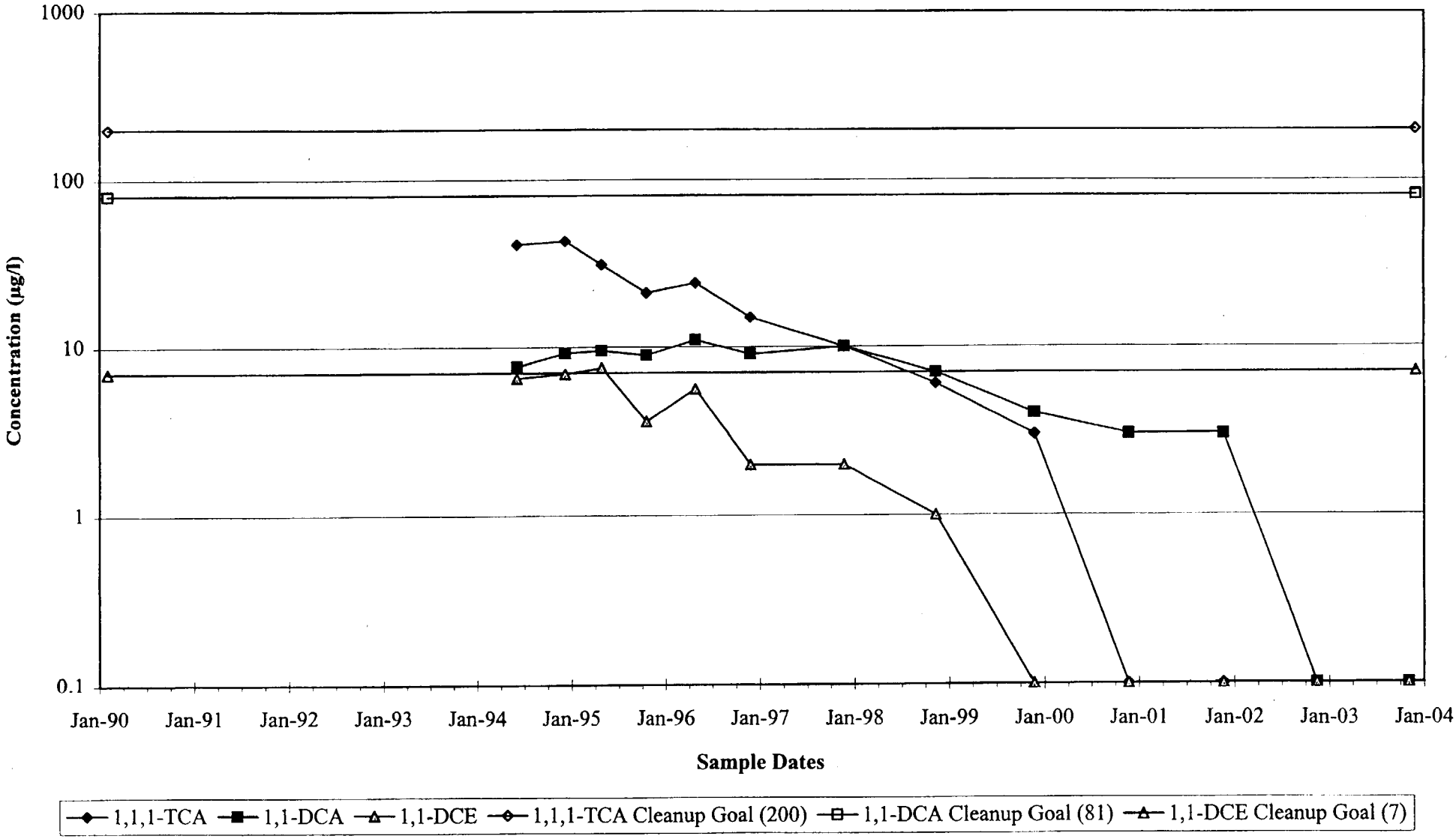
Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Figure 6
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-4D-2



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

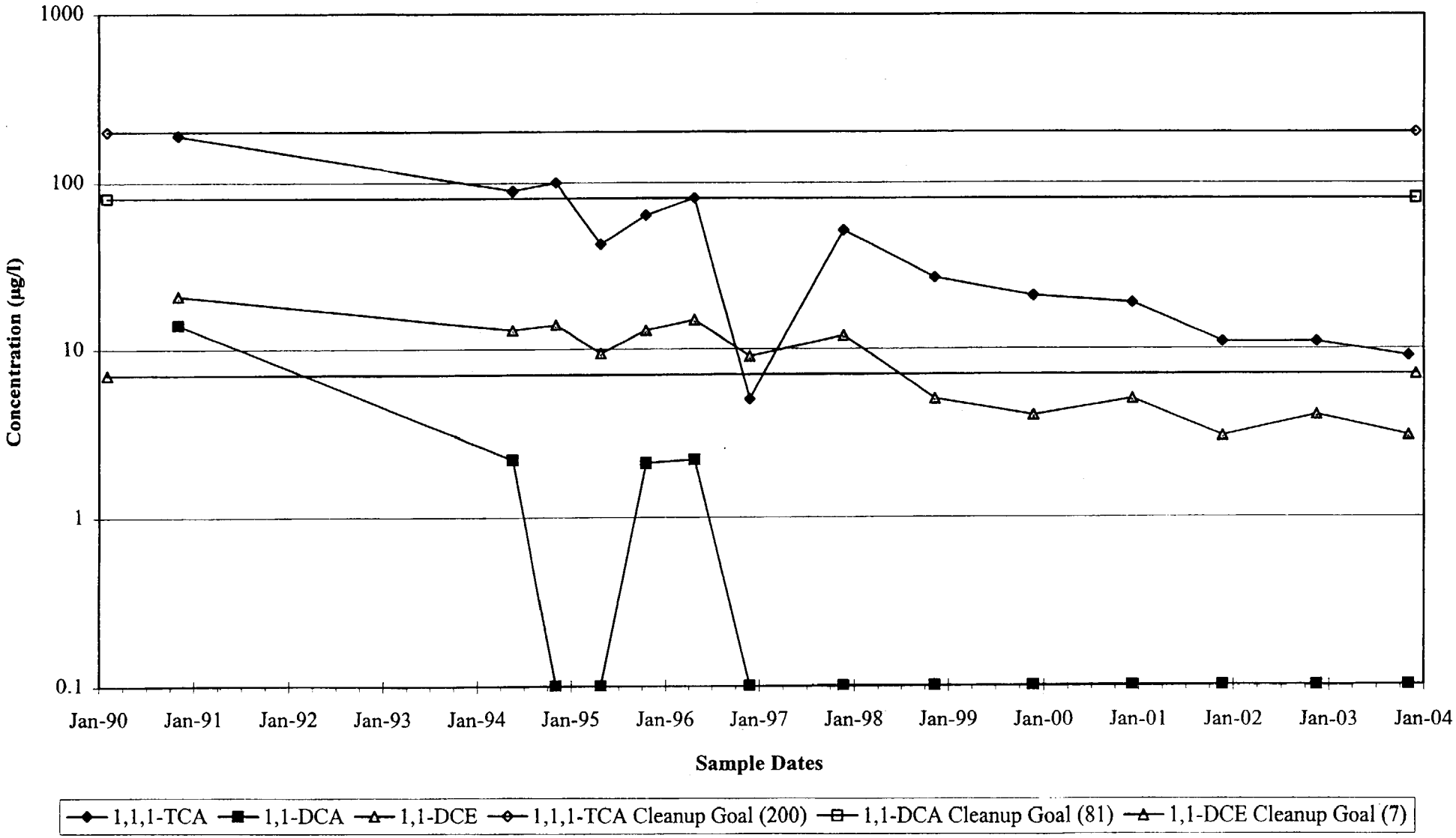
Figure 7
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-4D-3



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Sanborn, Head & Associates, Inc.

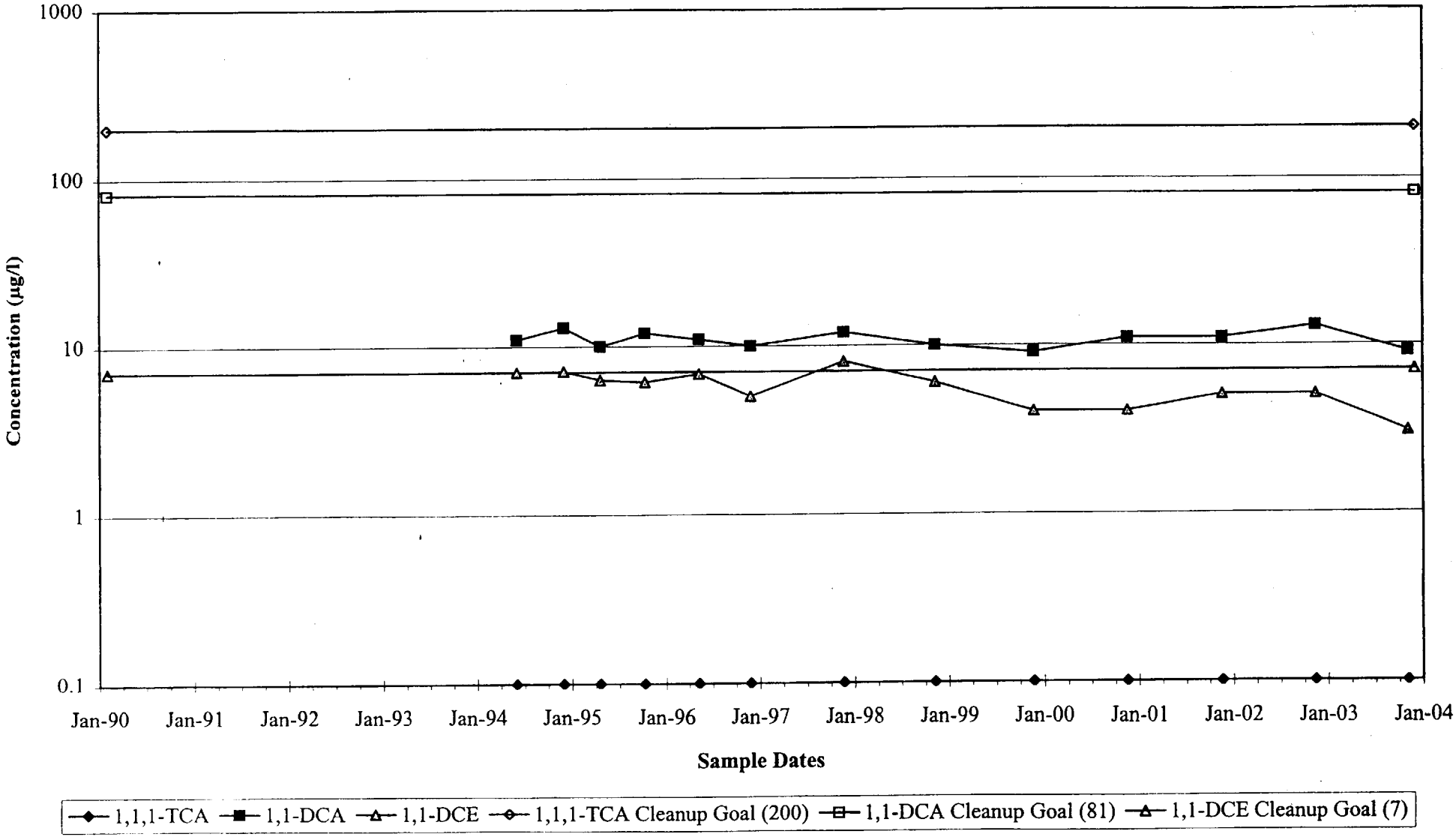
Figure 8
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-5S



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

Sanborn, Head & Associates, Inc.

Figure 9
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-6D-2



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

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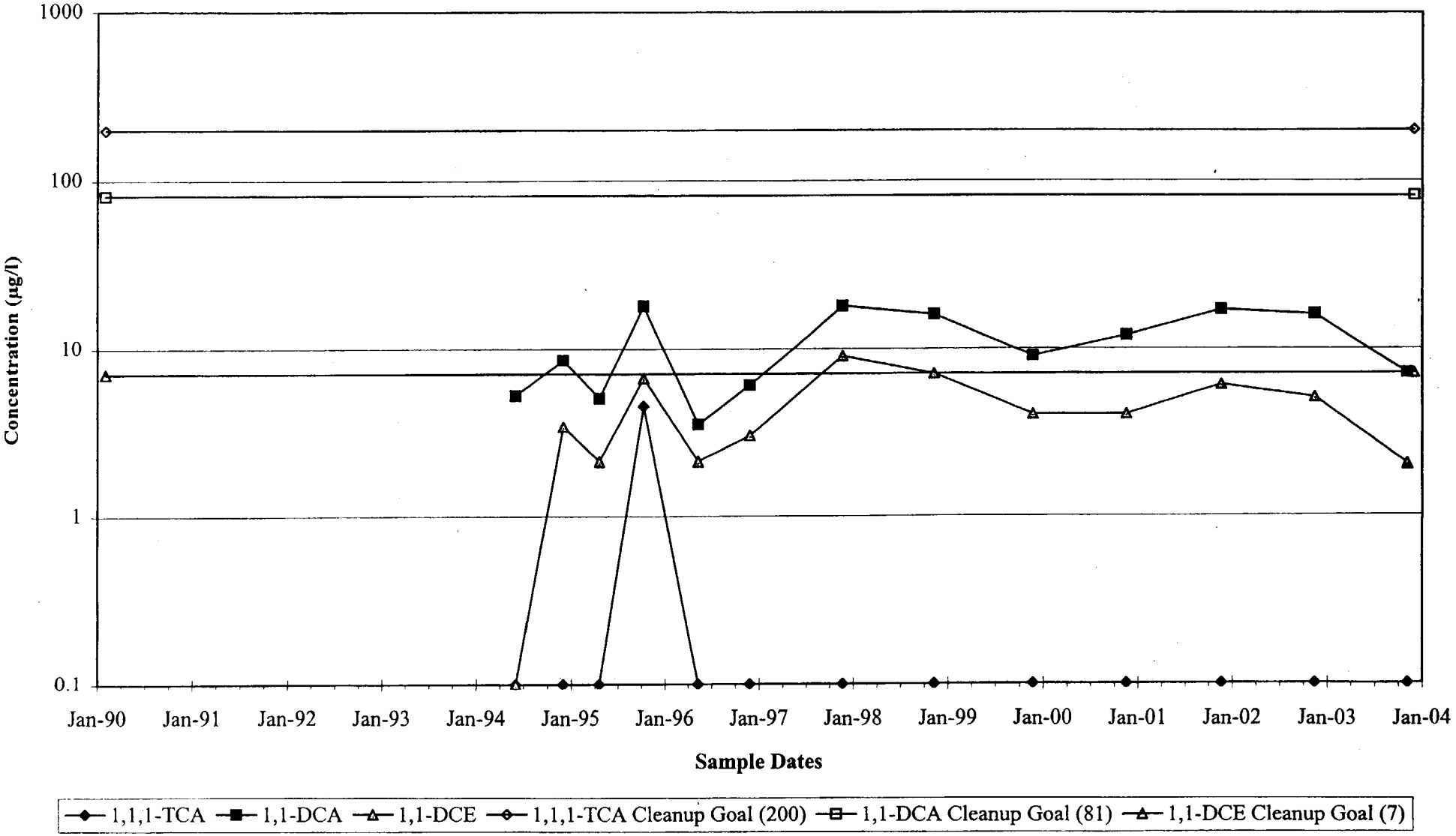
Sanborn, Head & Associates, Inc.

Figure 10
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-6D-4



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

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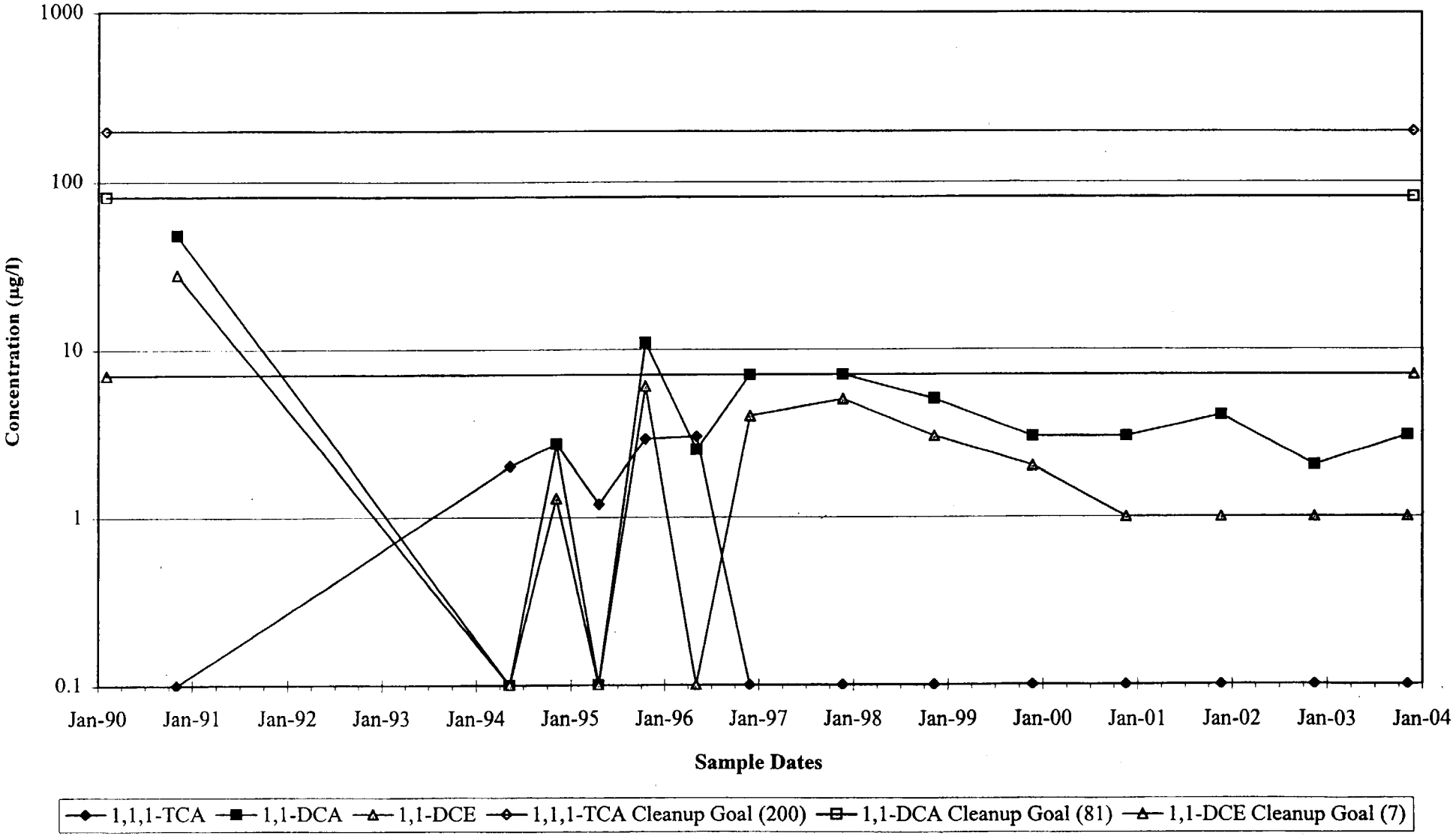
Sanborn, Head & Associates, Inc.

Figure 11
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-8D



Note: A 0.1 µg/l value indicates the concentration was below the detection limit.

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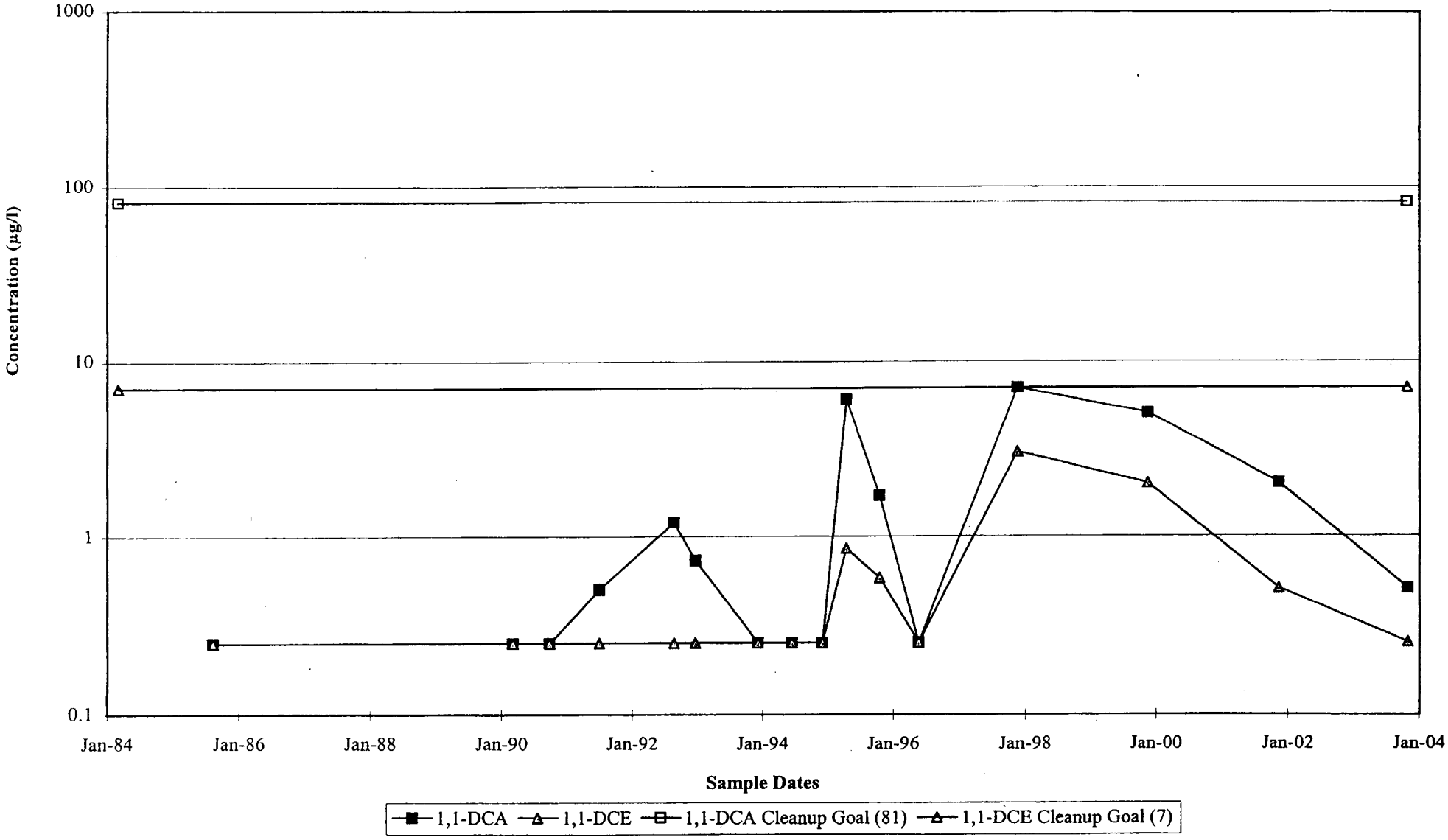
Sanborn, Head & Associates, Inc.

Figure 12
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-19D



Note: 1/2 the maximum detection limit for individual constituents typically ranges between 0.25 ug/l and 1 ug/l depending on the analytical method.

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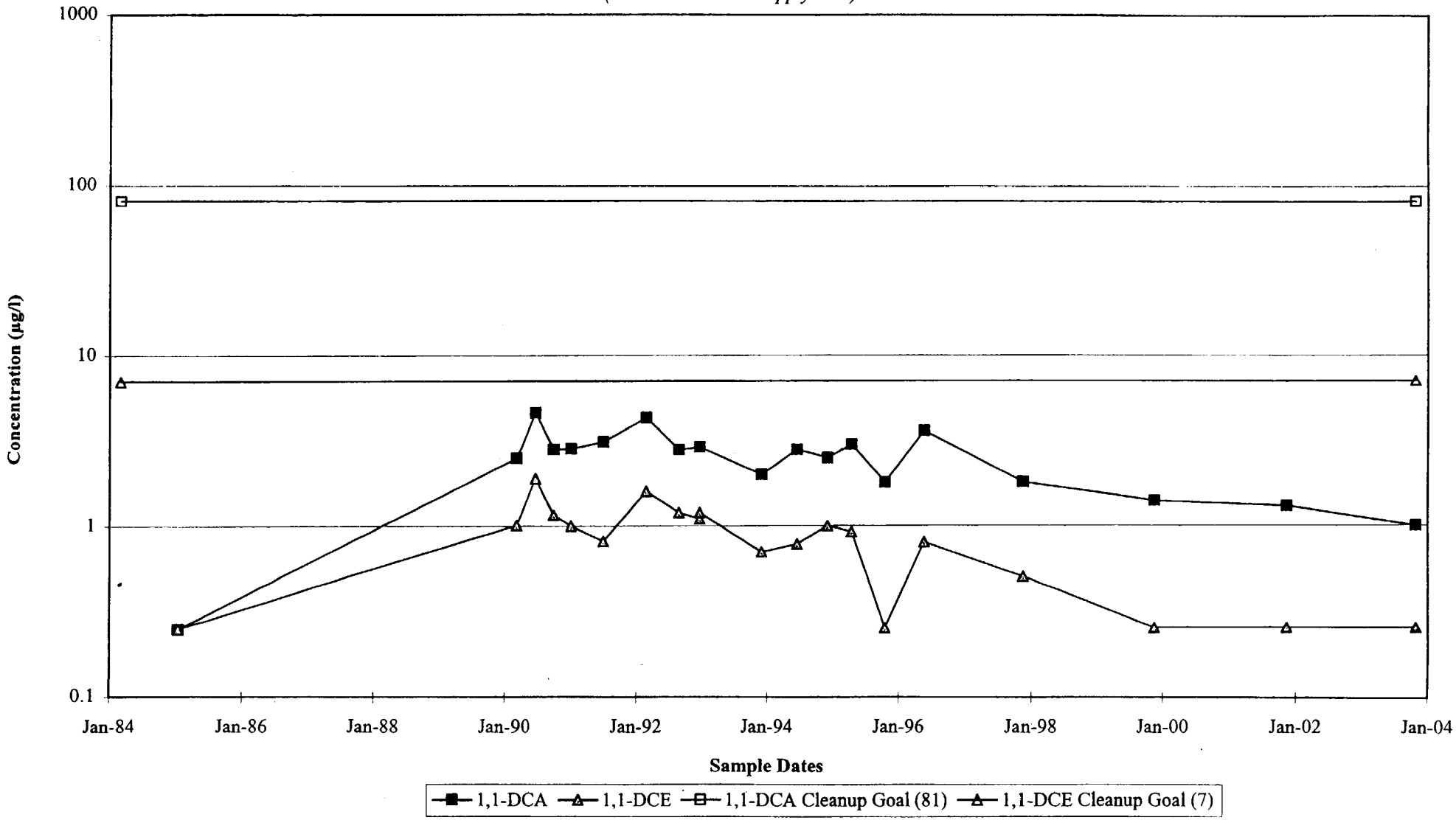
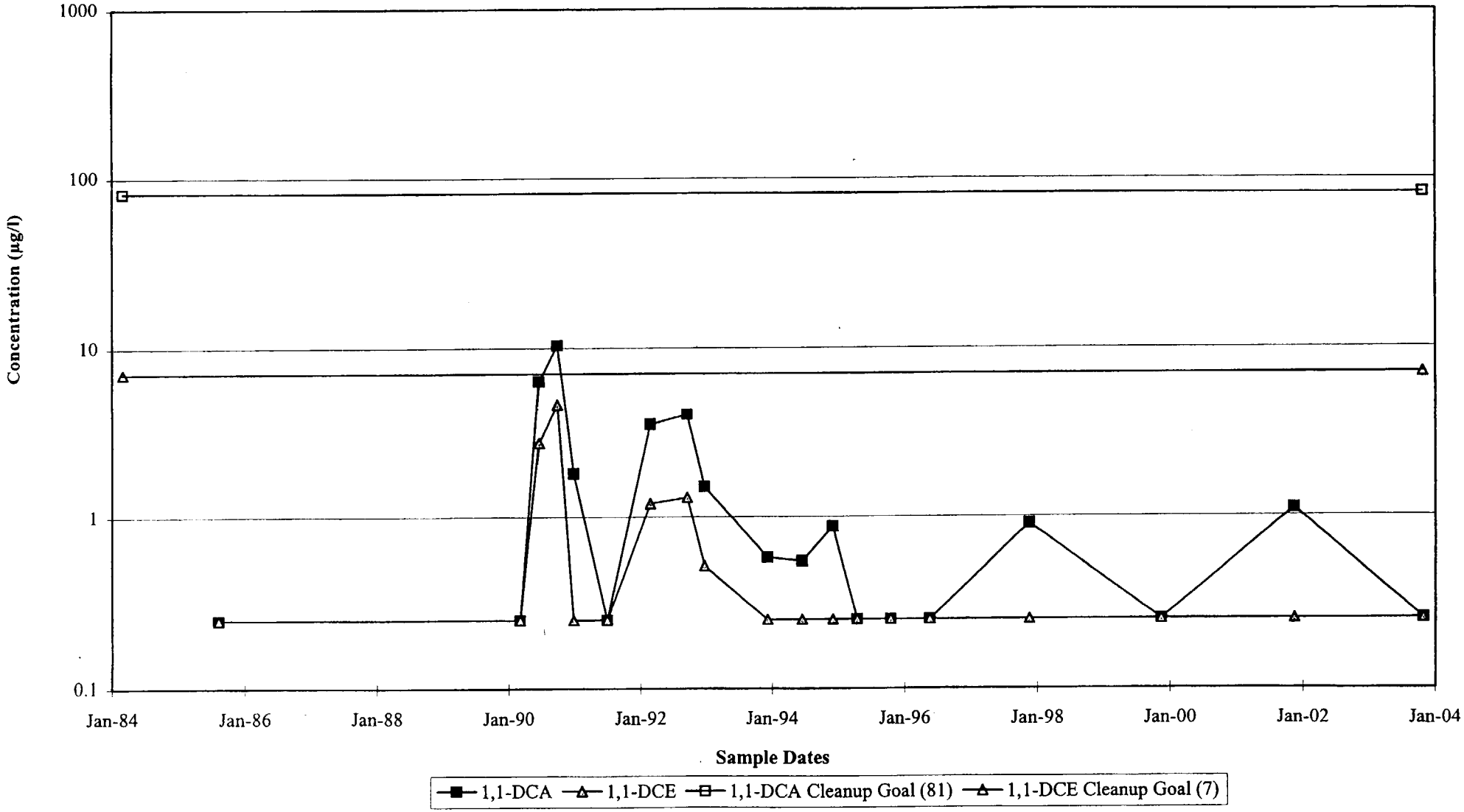
Sanborn, Head & Associates, Inc.

Figure 13
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-20D
(Active Residential Supply Well)



Note: 1/2 the maximum detection limit for individual constituents typically is 0.25 ug/l.

Figure 14
Town Garage/Radio Beacon Site
Londonderry, New Hampshire
Concentration vs. Time Plot
MW-23D
(Active Residential Supply Well)



Note: 1/2 the maximum detection limit for individual constituents typically is 0.25 ug/l.